Listing of the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

1 - 140. (Canceled)

141. (Currently amended) A nucleic acid ladder ~~comprising~~ consisting of a plurality of double stranded nucleic acid fragments, each fragment having a size in base pairs of between 20 kb and 100 base pairs, a copy number, a mass, and a relative mass wherein the mass of each fragment is the size in base pairs of the fragment multiplied by the copy number of the fragment, wherein the relative mass of each fragment is the mass of the fragment divided by the sum of the masses of all of the fragments, wherein the relative mass of ~~the fragments~~ any one fragment of the plurality ~~are substantially equal~~ is no more than 3 time the relative mass of any other fragment of the plurality, wherein the plurality comprises at least two fragments having a size greater than 1 kb, and wherein the plurality comprises at least two fragments having a size less than 1 kb.

142 - 149. (Canceled)

150. (Previously presented) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 3 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 3 fragments having a size less than 1 kb.

151 - 154. (Canceled)

155. (Previously presented) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 4 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 4 fragments having a size less than 1 kb.

156. (Previously presented) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 5 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 5 fragments having a size less than 1 kb.

157. (Previously presented) The nucleic acid ladder of claim 141, wherein the plurality of double stranded nucleic acid fragments are stained with a detectable label.

158. (Currently amended) The nucleic acid ladder of claim 157, wherein the detectable label is ~~SYBR green~~ [2-[N-(3-dimethylaminopropyl)-N-propylamino]-4-[2,3-dihydro-3-methyl-(benzo-1,3-thiazol-2-yl)-methylidene]-1-phenyl-quinolinium]+.

159. (Previously presented) The nucleic acid ladder of claim 157, wherein the detectable label is ethidium bromide.

160. (Previously presented) The nucleic acid ladder of claim 141, further comprising a dye.

161. (Canceled)

162. (Currently amended) The nucleic acid ladder of claim 141, wherein the ~~copy number of each~~ relative mass of any one fragment of the plurality is ~~such that the mass of each fragment is~~ no more than 2.5 times the relative mass of any other fragment of the plurality.

163. (Currently amended) The nucleic acid ladder of claim 141, wherein the ~~copy number of each~~ relative mass of any one fragment of the plurality is ~~such that the mass of each fragment is~~ no more than 2 times the relative mass of any other fragment of the plurality.

164. (Currently amended) The nucleic acid ladder of claim 141, wherein the ~~copy number of each~~ relative mass of any one fragment of the plurality is ~~such that the mass of each fragment is~~ no more than 1.5 times the relative mass of any other fragment of the plurality.

165. (New) A nucleic acid ladder comprising a plurality of double stranded nucleic acid molecules, wherein three or more of the molecules are of a size selected from the group consisting of:

(a) 100 base pairs,

(b) 200 base pairs,

(c) 300 base pairs,

(d) 400 base pairs,

(e) 500 base pairs,

(f) 650 base pairs,

(g) 850 base pairs, and

(h) 1650 base pairs;

wherein two or more of the molecules are of a size selected from the group consisting of:

(a) 1 kilobase pairs,

(b) 2 kilobase pairs,

(c) 3 kilobase pairs,

(d) 4 kilobase pairs, and

(e) 5 kilobase pairs;

wherein a copy number of each of the molecules is such that each molecule has a relative mass that is no more than three times the relative mass of another molecule.

166. (New) The nucleic acid ladder of claim 166, wherein four or more of the fragments are between 100 base pairs and 1650 base pairs.

167. (New) The nucleic acid ladder of claim 166, wherein five or more of the fragments are between 100 base pairs and 1650 base pairs.

168. (New) The nucleic acid ladder of claim 166, wherein three or more of the fragments are between 1 kilobase pairs and 5 kilobase pairs.

169. (New) A nucleic acid ladder comprising a plurality of double stranded nucleic acid molecules, wherein three or more of the molecules are of a size selected from the group consisting of:

(a) 100 base pairs,

(b) 200 base pairs,

(c) 300 base pairs,

(d) 400 base pairs,

(e) 500 base pairs,

(f) 650 base pairs,

(g) 850 base pairs, and

(h) 1650 base pairs;

wherein two or more of the molecules are of a size selected from the group consisting of:

(a) 1 kilobase pairs,

(b) 2 kilobase pairs,

(c) 3 kilobase pairs,

(d) 4 kilobase pairs, and

(e) 5 kilobase pairs;

wherein a copy number of each of the molecules is such that each molecule has a relative mass that is no more than three times the relative mass of another molecule and;

further comprising a highlight fragment having a relative mass that is three times greater than the other fragments in the composition.

170. (New) The nucleic acid ladder of claim 169, wherein four or more of the fragments are between 100 base pairs and 1650 base pairs.

171. (New) The nucleic acid ladder of claim 169, wherein five or more of the fragments are between 100 base pairs and 1650 base pairs.

172. (New) The nucleic acid ladder of claim 169, wherein three or more of the fragments are between 1 kilobase pairs and 5 kilobase pairs.

173. (New) The nucleic acid ladder of claim 169, wherein the highlight fragment has a relative mass that is at least 5 times greater than the other fragments.